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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,966	09/05/2003	Harmesh K. Saini	M- 15242 US	8910

7590 11/16/2005

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EXAMINER

DRODGE, JOSEPH W

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/655,966

Applicant(s)

SAINI, HARMESH K.

Examiner

Joseph W. Drodge

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 27-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 27-41 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0903.0705.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-26, drawn to a method of analyzing trace metals, classified in class 436, subclass 73.
- II. Claims 27-41, drawn to an electrodialysis apparatus, classified in class 204, subclass 539.

The inventions are distinct, each from the other because:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be employed in an electrodialysis fuel cell application.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with David Parks on 11/9/2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-41 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petty et al patent 6,296,760 in view of Dasgupta et al PBPUBS Document US2005/0202563 (effective filing date of 9/3/2002), Hase patent 6,030,844 and Stillian et al patent 5,518,622.s Petty et al disclose methods of analyzing trace metals that are in solution with water, providing a sample channel 16 separated from a carrier solution channel 14 by an ion exchange membrane 12 (see column 4, lines 8-27) and

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flowing a carrier solution reagent component that diffuses through the membrane to treat the metals in the sample by chelation so as to prepare the metals for detection (especially column 4, line 48-column 5, line 9). A complex is formed and the metals are stabilized as in independent claim 8 (column 4, line 66-column 5, line 4).

The claims differ in requiring in (1) the sample contains a matrix contaminant and in removal of such matrix contaminant and in (2) requiring providing of an electrical potential to assist diffusion of ions through the membranes

Dasgupta et al teach similar reagent materials to that found in Petty which flow through a carrier liquid stream and diffuse into the sample channel to react with and remove matrix contaminants (in particular, paragraphs 34 and 38). Stillian similarly teaches removal of matrix contaminants by ion exchange through a membrane (column 7, lines 39-49). It would have been obvious to one of ordinary skill in the art to have adapted the Petty process to analysis of metals containing matrix contaminants, as taught by Stillian and Dasgupta, so as to analyze metal concentrations in diverse applications where metals are found with contaminants, and to remove matrix components which interfere with the accuracy of downstream detection.

Regarding providing of an electrical potential; each of Hase (column 4, line 56-column 5, line 13), Stillian beginning at column 2, lines 52-63 and column 7, lines 49-53 and Dasgupta at paragraph 6 teach such providing. It would have also been obvious to have provided an electrical potential to assist diffusion in order to react with the matrix contaminants more quickly and more thoroughly, as well as to electrolytically generate the ions needed for neutralization of the sample.

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Independent claims 8 and 24 further differ in requiring at least two ion exchange membranes. However, Hase teaches such plurality of membranes beginning with the Abstract, as does Stillian at column 5, line 8-column 6, lines 65. It would have been additionally obvious to employ the plural membranes of Hase and Stillian in the Petty process, so as to remove both cationic and anionic matrix contaminants separately.

For claims 2,3 and 14, forming of a metal complex is covered in Petty at column 4, lines 65-67.

For claims 7,14 and 13, Hase teaches hydroxide ions in carrier solution (column 4, lines 41-42, or see Stillian at column 4, lines 13-15.

For claims 6,12 and 21, Petty discloses spectrometry at column 5, lines 50-53.

For claims 4,5,9 and 10, Petty discloses organic acid and amine reagents at column 4, line 61-column 5, line 9.

For claims 11 and 17, Hase teaches anode and cathode electrode (Abstract, etc.).

For claims 22,23,25 and 26, different cation and anion exchange membranes are taught by Stillian at column 6, lines 7-34 as well as in various text of Hase.

For claims 15 and 19, recycling is discussed by Stillian at column 12, line 64-column 13, line 23.

Petty suggests use of heated reservoir for claim 16 in column 10, lines 25-30.

For claim 18, Stillian reverses polarity of employed electrodes at column 10, lines 31-32.

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For claim 20, the carrier solutions contain be different as in Hase at column 2, lines 56-62, for instance employing an alkali solution and acidic solution ,respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

November 14, 2005


JOSEPH DRODGE
PRIMARY EXAMINER